

Code Blue On Orbit: Treating Cardiac Arrest on the ISS

Authors: Bacal and Redmond

Reviewers: Hamilton, Paul, McCulley

Introduction: As a result of the Columbia tragedy on February 1, 2003, the International Space Station (ISS) crew size has been temporarily reduced from three to two. This change forces adaptations in many operational procedures used by the crew, including medical protocols which were designed for scenarios involving one casualty and two caregivers. The Office of Space Medicine directed that the procedure for the resuscitation of a crewmember in cardiac arrest be rewritten for use by a single care provider. Methods: Adaptation of this procedure made use of current American Heart Association Advanced Cardiac Life Support (ACLS) procedures and reflects necessary compromises between the realities of the operational environment and prompt provision of medical care. Results: Numerous changes were incorporated due to the diminution in available personnel, including substitution of endotracheal rather than intravenous delivery of drugs, more rapid defibrillation, addition of a precordial thump, removal of transcutaneous pacing, streamlining of procedural steps, and clarification of termination criteria. Discussion: The on-orbit care available to the ISS crewmembers is constrained by numerous factors, including crew medical training, minimal medical assets, limited air/ground communication, and a single caregiver for the foreseeable future. All of these combine to make a successful resuscitation unlikely, however, this procedure must ultimately deal with not only the patient's welfare, but also that of the caregiver, the mission, and the program.